

DATABASE ADMINISTRATION SERVICES
Worksheet & Instructions*Department of Information Technology*

The following worksheet is intended to assist agencies in estimating the cost of database management services. The worksheet is to be used to convert database metrics to estimate number hours per week needed to keep a database operational and efficient. The number of hours of management and maintenance vary as a function of the database metrics.

In all categories, fill in the number of units your agency will require in FY04 and FY05. Multiply the number in each fiscal year with the unit cost and place that sum in the Total Cost column for the respective fiscal year. The total from the worksheet should be placed in Category 26 under the proper general ledger number, maintenance or enhancements, as explained in the Budget Instructions.

The following 8 criteria are used to estimate the amount of time within a week a DBA would spend to maintain a test and production database.

1. The Hardware/Software platform on which the Database Management System (DBMS) will execute (Hardware and Operating System). Current available platforms as listed in the worksheet. Select the Hardware/Software Platform listed in the worksheet.
2. Database Size. The size of a database (Test & Production) reflects the amount of work required to service the systems and keep it operational. As the database size grows resource contention and performance problem occur which require investigation and modification to search mechanisms and optimizing techniques. Select the database size that is listed in the worksheet.
3. Number of application programmers working on the system. The larger a project becomes more time must be spent reviewing SQL for proper usage. As requirements change or are better understood search algorithms and optimizing techniques change for database access. DBA's expend a large quantity of resources to minimize the time spent, and resources used by the application. Select the number of application programmers working on the system as listed in the worksheet.
4. Number of Database End Users that will be actively using the database being developed or in production. This is a measure of the work required, in transactional system, of a DBA to study volume counts, encountered or anticipated, on the heavy volume transactions. This is done to minimize resource contention bottlenecks and modify the physical implementation of the data model to provide the required speed. The different DBMS's all have different techniques to improve processing. Please select the number of Database End Users as listed in the worksheet.
5. The Complexity of the database increases as the number of tables, indexes, constraints, triggers and multiple applications share the data. Questions that need to be answered include: Will it require extensive modification; Will it be used in a different way from its original design; Will it be supported by the application vendor or not? Are these features used in this release of the DBMS that are obsolete in the next release? Add up the number of tables, indexes, constraints, triggers, special features used for all databases supported (both test & production) and find the hours in the table in the Complexity portion. Please select the level of criteria as listed in the worksheet.

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6. Database/Software/Hardware Stability factor is a multiplier based on the current documentation in the field and discussion with the software vendor of the DBMS as to its stability. The following consideration will impact this factor: Is the system being implemented of new hardware or untested hardware? Is the system being implemented on a BETA release of the operating system? If the system has been in production for a number of years and has been stable, it may be a 1. This is an experience factor estimate that requires an understanding of the operating system, hardware platform, and expected changes due to version migrations in the software systems to new platforms. Please select the database/software/hardware stability in the worksheet.
7. Documentation Goodness factor is a measure of the information available to define the table(s), their functions, the column(s) within the table, its content, and/or how derived. This is a multiplier that is a gauge of the database documentation. Its intent is to determine how long it would take a DBA unfamiliar with the system to be able to maintain the database. This documentation allows DBAs and programmers to understand the functions of the database. In off the shelf software sometimes this is available in whole or in part, in others it is hidden to maintain vendor trade secrets. Please contact DoIT to determine this factor.

To compute the number of dollars of database administrative services required you will need to summarize total number of dollars for items 1 through 5 in sub-total (X), then multiply this number by factors 6 and 7. The computation can be displayed as follows: $((1 + 2 + 3 + 4 + 5) * 6) * 7 = \text{Amount of Database Administration services needed for that fiscal year.}$

Please contact the Department of Information Technology's (DoIT's) Database Administration Unit at 775-684-7303 for assistance in completing the attached worksheet.

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BUDGET CATEGORY	NUMBER OF HRS		UNIT COST	TOTAL COST	
	FY04	FY05		FY04	FY05
MEASUREMENT CRITERIA					
1. Hardware/Software Platforms					
IBM MVS V2.9	52	52	53	2,756	2,756
Windows NT 4	260	260	53	13,780	13,780
Windows 2000 ADV.SRV	52	52	53	2,756	2,756
IBM AIX/RS V 4.3	78	78	53	4,134	4,134
IBM AIX/RS V 5.X	104	104	53	5,512	5,512
Sun Solaris	78	78	53	4,134	4,134
2. Database Size					
1 megabyte – 400 megabytes	52	52	53	2,756	2,756
401 megabytes – 1 gigabytes	104	104	53	5,512	5,512
1.001 gigabytes – 10 gigabytes	130	130	53	6,890	6,890
10.001 gigabytes – 100 gigabytes	156	156	53	8,268	8,268
100.001 gigabytes – 600 gigabytes	208	208	53	11,024	11,024
600.001 gigabytes – 1 terabytes	312	312	53	16,536	16,536
1.0001 terabytes – 10 terabytes	520	520	53	27,550	27,560
Greater than 10 terabytes	Call DoIT	Call DoIt			
3. Number of Programmers					
1 → 2	52	52	53	2,756	2,756
3 → 10	104	104	53	5,512	5,512
11 → 20	312	312	53	16,536	16,536
21 → 40	416	416	53	22,048	22,048
41 → Higher	Call DoIT	Call DoIT			
4. Database End Users					
1 → 10	26	26	53	1,378	1,378
11 → 20	52	52	53	2,756	2,756
21 → 100	78	78	53	4,134	4,134
101 → 200	91	91	53	4,823	4,823
201 → 300	156	156	53	8,268	8,268
301 → 500	208	208	53	11,024	11,024
501 → 3000	416	416	53	22,048	22,048
3001 → 5000	520	520	53	27,560	27,560
5001 → Limit	Call DoIT	Call DoIT			

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BUDGET CATEGORY	NUMBER OF HRS		UNIT COST	TOTAL COST	
	FY04	FY05		FY04	FY05
5. Complexity (number of tables, indexes and constraints, etc.)					
20-40	52	52	53	2,756	2,756
41-1000	104	104	53	5,512	5,512
1001-3000	156	156	53	82,68	82,68
3001 – 6000	260	260	53	13,780	13,780
6001 – 10000	416	416	53	22,048	22,048
10000-Unknown	Call DoIT	Call DoIT	53		
Sub Total = X = (1 + 2 + 3 + 4 + 5)					
6. Database/Software/Hardware Stability Multiplier					
MVS-DB2	1.00	1.00	53	52.0	52.0
MVS-ORA	1.10	1.10	53	57.2	57.2
AIX-Ora	1.05	1.05	53	54.6	54.6
SUN-Ora	1.05	1.05	53	54.6	54.6
Windows2000 Adv.Ser.-UDB	1.05	1.05	53	54.6	54.6
Windows2000 Adv.Ser-ORA	1.05	1.05	53	54.6	54.6
Windows2000 Adv.Ser.-MS/SQL	1.05	1.05	53	54.6	54.6
7. Document Goodness Factor	Call DoIT	Call DoIT			
Special Database Activity Requirements	Call DoIT	Call DoIT	53		
				(((X)*6)*7) total below	(((X)*6)*7) total below
TOTALS					

Prepared By (Please Print)			
Name:		Date	
Title		Phone	
Signature			
Agency			

DoIT Review/Approval: _____ **Date:** _____